ENVIRONMENTAL ASSESSMENT, FONSI AND DECISION RECORD

BLM, Bishop Field Office
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EA Number: CA-170-03-48
Lease/Serial/Case File No.: Marble Creek Allotment File 6025

Proposed Action Title/Type: Marble Creek Fence and Grazing Plan. Fence one mile of Marble Creek to exclude cattle and implement a grazing plan that limits summer grazing to one year in three.

Location of Proposed Action: Benton Management Area T2S R32E Sec. various

Plan Conformance: The proposed action is subject to the Bishop Resource Management Plan, approved March 25 1993. The following RMP directives are addressed:

Area Manager's Guidelines, page 9: "5. Vegetative goals for watershed protection and wildlife [and] riparian… habitats will be given strong consideration in relationship to livestock forage needs. Permittee desired practices will be allowed provided vegetative goals can be met. 6. Rehabilitation of riparian areas will receive high priority for project implementation."

Standard Operating Procedures, Grazing Systems, page 10: "1. Plant phenology of key forage species for livestock and wildlife will be considered in determining grazing schedules. 2. Grazing system design will include consideration of wildlife habitat, watershed and desired plant community goals."

Standard Operating Procedures, Riparian and Wetland, page 13: "Rehabilitate or fence riparian areas that consistently show resource damage from any cause if conflicts cannot be resolved in another manner."

Benton Management Area, page 42: "Stabilize and restore portions of...Marble Creek to improve riparian and aquatic habitat quality. Restore streambank stability and channel morphology. Improve riparian vegetation conditions. Meet DPC goals on 20 acres (100%) of riparian habitat. Meet DPC goals on 25% of sagebrush-bitterbrush to provide cover and forage for mule deer."

Desired Plant Community (DPC) for Riparian Vegetation, Appendix 1, pages A1-6 and A1-7.

The proposed action conforms with BLM Central California Rangeland Health Standards and Guidelines. It specifically addresses the following:

Guideline 2: "Implement grazing systems that regulate the timing and intensity of grazing..."

Guideline 5: "Perennial plant utilization should be limited to appropriate levels of the current year's growth..."

Guideline 6: "Implement grazing systems that permit existing native species to complete entire life cycles..."

Guideline 7: "Use grazing systems that are compatible with the persistence of desired species..."

Guideline 10: "Periods of rest from livestock grazing... should be provided during/after episodic events..."

Guideline 11: "... allow for the reproduction of species that will maintain riparian-wetland functions..."

Guideline 12: "... maintain a minimum herbage stubble height of all stream-side, riparian and wetland areas..."

Guideline 13: "Water sources, wetlands and riparian areas may be fenced to reduce impacts from livestock."

Need for the Proposed Action

To facilitate continued livestock grazing use on the Marble Creek grazing allotment, it is necessary to reduce impacts to vegetation and soils by either temporally and/or spatially restricting grazing use to locations and/or levels that are sustainable over the long term. The current year-long, every summer grazing strategy is not sustainable, in that DPC goals cannot be met.

Affected Environment

The Marble Creek grazing allotment covers 18,097 acres on alluvial fans at the base of the White Mountains in Hammil Valley, south of Benton and east of U.S. Highway 6. Elevations on the allotment range from 4,700 feet along the valley floor to 7,000 at the base of the mountains with slopes ranging from 5-15 percent. Precipitation is sparse and occurs primarily in winter with 8-12" precipitation along the upper portions of the alluvial fans decreasing to 5" and less at the terminus of the fans. Summers are hot and dry. The average annual air temperature is 47-56° F with mean annual soil temperature of 47-63° F. The frost-free period is about 130-160 days. Marble Creek is a narrow perennial stream flowing out of the White Mountains across the northern part of the allotment and supporting riparian vegetation along its length. The stream provides water to the Harris Ranch, located on private land west (downstream) of the northern portion of the allotment. Upland and riparian environments are discussed separately below.

Upland environment

The Marble Creek allotment is within the Great Basin physiographic province and contains two major soil types: rocky Xeric Torriorthent soils characteristic of arid alluvial fan landforms and a large inclusion of Xeric Haplargids to the north which supports the most southern bitterbrush community along the eastern flanks of the White Mountains. Major plant communities within the allotment consist of shadscale-scrub on the lower portions of the alluvial fans characterized by such dominant plant species as *Atriplex confertifolia,* Nevada Ephedra (*Ephedra nevadensis),* and winter fat (*Krascheninnikovia lanata)*. Understory vegetation within the shadscale scrub community is mostly limited to annual forbs. At the higher elevations of the fan Great Basin Scrub communities are dominated by bitterbrush (*Purshia tridentata*), Great Basin sagebrush *(Artemisia tridentata* ssp. *tridentata*) and a vigorous understory perennial bunchgrass (*Achnatherum speciosum)* component.

Along the higher elevation portions of the fans, especially in the vicinity of Indian Creek where calcareous deposits are found, cryptobiotic soil cover makes up approximately 10-15% of the ground cover. The crusts are integral to nutrient cycling in arid environments and may reduce the spread of invasive annual grasses.

The arid growing conditions of the allotment are a result of its physiographic location and soils and although many plant species have adapted to similar environments their response to different levels and timing of grazing is critical to maintaining overall ecological function of these plant communities in the long-term.

A review of upland vegetation research literature and the forage inventory data was conducted for the most important forage species occurring on the allotment. The common name and current scientific name of each key species is given in Table 1 (page 3), with the numbers of acres and percentage of the total allotment acreage where that species occurred, and a description of its relevant characteristics.

Table 1. Important upland forage species on Marble Creek Allotment.

Common name	Scientific name	% composition	Acres	% of allotment
Desert needlegrass	*Acnatherum speciosum*	1-5	13,708	97

Deep-rooted and producing abundant seeds, withstands grazing well. Widely distributed; leafy; foliage remains green over a long growing period and cures well on the ground, making it valuable for fall and winter grazing. Mature foliage tends to be wiry and coarse, lessening palatability. Seeds are injurious to grazing animals: sometimes work into mouth, tongue, ears or nose (Range Plant Handbook [RPH], 1937).

Bottlebrush squirreltail grass	*Elymus elymoides*	1- 4%	7,434 acres	52%

Fair, fairly good or occasionally good cattle forage for spring and early summer use. Livestock tend to avoid grazing it after the bristly heads develop. It tends to green up with fall rains and, if heads have fallen, is again grazed, depending upon the amount of other forage available. Considered good fall and winter forage in the desert regions of Utah and Nevada (RPH, 1937).

Nevada jointfir	*Ephedra nevadensis*	7-77%	12,261 acres	86%

Moderately palatable to cattle and deer. Frequently grazed only slightly or not at all in summer, but younger stems are palatable in winter (RPH, 1937). Jointfirs typically produce little annual growth nor do individual plants produce a large volume of forage.

Bitterbrush	*Purshia tridentata* var. *tridentata*	2-23%	3,255 acres	23%

Grazed throughout the year but apparently most palatable in spring, winter and late fall. Withstands grazing remarkably well but on overgrazed ranges is killed out by excessive use and lack of seedling reproduction. Especially important as winter and early spring feed for deer (RPH,1937).

Winterfat	*Krasheninnikovia lanata*	2-8%	8,365 acres	61%

Chiefly valuable on winter ranges; highly palatable and nutritious to cattle and deer. Drought resistant because of its deep taproot and extensive lateral roots, but during unusually dry years produces scant, brittle growth or may appear dead. Annual growth depends on storage of abundant winter moisture. Persistent and continuous overgrazing has reduced winterfat on many ranges and destroyed it on others (RPH, 1937).

Desert needlegrass is considered a key species on this allotment and has the potential to be more abundant on the ecological sites where it occurs. Although it is found on 97% of the allotment acreage, it constitutes a low percentage of the overall plant composition and is restricted to the upper portions of the alluvial fans where precipitation levels are higher.

The bitterbrush community on the Marble Creek allotment is primarily on the five sections immediately north of Marble Creek. Those sections are the core area of approximately 3,000 acres of critical winter range for the Casa Diablo mule deer herd, with bitterbrush providing key winter forage and thermal and hiding cover. Cattle have access to, and use this area at any time they are on the allotment. Winterfat ranks with bitterbrush, due to its preference by both cattle and deer, as a key species for winter forage and key management concern.

Riparian vegetation on the Marble Creek allotment is found along the entire length of Marble Creek, and along Indian Creek for about 1/4 mile in Pellisier Canyon. The primary woody species are willows *(Salix spp.)* and wild roses *(Rosa ultramontana),* and herbaceous species are primarily comprised of bluegrasses *(Poa spp.),* sedges *(Scirpus* and *Carex spp.)* and rushes *(Juncus spp.)*.

Marble Creek is a perennial stream flowing across more than three miles of public land. The condition of riparian vegetation on the upper 2 miles of Marble Creek is generally good. The upper reach is densely vegetated and well shaded, and root systems bind the soil of the channel. Here the stream is surrounded by dense mature willows which function as a natural fence, promoting understory growth and protecting stream banks from erosion along much of the stream while allowing cattle access to water in several places. This reach is in Proper Functioning Condition (PFC) (BLM 1998) and meets riparian Desired Plant Community (DPC) goals established by the 1993 RMP.

The lower 1.2 mile of Marble Creek is in a degraded condition. The stream's course along this reach has changed at various times, and growth of woody vegetation has been held in check by grazing. As a result, the stream banks are not protected from cattle access and are subject to trampling, breakage and compaction and resultant instability. Stream survey files document poor condition of this reach in 1978, due to livestock use (BLM 1978); its condition improved somewhat during periods of non-use since that time, but remains degraded compared to the upstream reach. This reach is in Functioning At Risk condition. Vegetation does not meet DPC goals in this reach.

Between these upstream and downstream reaches, a barbed wire exclosure has protected a 0.2 mile segment since 1987. That fence was intended as the first phase of a project to be continued in consecutive segments. When vegetation inside the fence attained a condition similar to that upstream of the fence, it would be removed and the next segment downstream would be fenced. Woody vegetation has grown vigorously within the fence and there is a complex midlevel herbaceous understory structure that is entirely lacking on the downstream side of the fence. The fence has not been removed as willow stems are not yet thick enough to prevent cattle egress.

Marble Creek provides important habitat for riparian-obligate songbirds, including several neotropical migratory species, especially during the breeding season. Of all 46 transects surveyed as part of a 1978-1979 comprehensive wildlife inventory of the Bishop Resource Area, the Marble Creek Riparian transect had the second highest density of breeding birds (Jones 1978,Weston and Johnston 1980). In 1998 and 1999 the Eastern Sierra Riparian Songbird study established and monitored a point count transect on Marble Creek, consisting of 21 points at 250 m intervals and covering the entire BLM-administered segment of the stream. The study has detected 33 bird species as confirmed or probable breeders on Marble Creek, including 6 U.S Fish and Wildlife Service (USFWS) Region 1 Species of Management Concern and 4 California Partners in Flight Riparian Habitat Joint Venture (CPIF RHJV) Riparian Focal Species (Heath and Ballard 2000).

Using data from the first two years (1998 and 1999) of the Eastern Sierra Riparian Songbird study, Heath and Ballard (2000) found that at Marble Creek bird species diversity was positively correlated with tree height, and that bird species diversity for the upper reach of the stream, where riparian vegetation is well established (mean 4.28), was almost twice the diversity found on the lower reach (mean 2.16). Abundance of spotted towhee, the most abundant breeding bird on Marble Creek, was positively correlated with cover provided by shrub-sized willow and by Fremont cottonwood.

Marble Creek lies just south of the large concentration of bitterbrush on the allotment and comprises part of the critical mule deer winter range, providing water and cover for deer and their predators. Like other streams in arid regions it also provides critical habitat for many small animals, including mammals, reptiles and insects.

Marble Creek has no known amphibians or native fish. It supports a small, self-sustaining population of brown trout as a result of stocking by California Department of Fish and Game with rainbow and brown trout which ended in 1975. The creek, however is probably too small and remote to be an important recreational fishery.

The Bishop Resource Management Plan (RMP), and its precursor the Benton-Owens Valley Management Framework Plan (MFP), prescribed the season of use for the Marble Creek allotment to be yearlong. The RMP is both a plan and a decision document, which if proposed for change requires a Plan Amendment (PA), an environmental review to analyze the effects of changing the existing decision, and public review.

Of 59 allotments within the Bishop Field Office's administrative boundaries, the Marble Creek allotment is the only one which has a yearlong season of use. The other five allotments in similar mixed desert shrub communities along the western alluvial fans of White Mountains have seasons of use of October 1 to May 15 or June 15**.**

In recognition of the public's concern for improved vegetative conditions, both upland and riparian, on public rangelands under the Rangeland Health Initiative, BLM is required to assess rangelands and pursue actions as needed that will result in measurable improvement. Professional biological and range management staff in the Bishop Field Office have expressed concern as to whether the health of the rangelands can be maintained on this allotment with a yearlong season of use, particularly along the creek. This EA documents their review of (1) scientific/professional literature pertinent to appropriate grazing regimes for the upland and riparian environments, (2) management history, (3) grazing capacity based on Proper Use Factors, and (4) recent monitoring data.

Originally BLM staff proposed to eliminate summer grazing on the allotment. The permittee, Lone Tree Cattle Co. (LTCC), and their range consultant developed an alternate proposal which involves fencing the most degraded portion of the stream and implementing a grazing schedule that allows for summer use in some years and not in others. The proposed action is based on that proposal.

The amount and nutritive quality of plant production is a function of overall plant vigor, e.g. understory root development and above ground stem and leaf material that is in sufficient amounts to allow for photosynthesis to occur over a wide range of the growing seasons.. The grazing season and intensity, in turn, can have a pronounced effect on the amount of forage produced and subsequent, long-term plant vigor.

Spring (March-May) is the most active growth period for desert plants with dormancy occurring during the summer months due to the higher air/soil temperatures and lack of precipitation. Cook (1971) documented that the season of harvesting desert range plants had significant effects upon the yield and vigor of plants and that spring clipping was considerably more detrimental to the plants than either early or late winter clipping or fall clipping. Chemical analyses indicated that spring growth furnished the highest nutritional value, but the plants were more susceptible to damage from defoliation during spring compared to fall and winter grazing . The resulting depletion of carbohydrate reserves appeared to be the mechanism leading to reduced plant vigor and subsequent range deterioration.

Autumn reserves of carbohydrates were most reduced when defoliation occurred during rapid growth about May 1, or when plants approached maturity about July 1. Reserves were least reduced when defoliation was before or after the growth period: during early spring (about April 1) or after dormancy (about November 1). Vigor was least affected in plants clipped about January 1, and plants clipped both about January 1 and again about May 1 were harmed the most. Late spring (May 1) clipping was considerably more detrimental to vigor than early spring (April 1) clipping. Continuous winter harvesting, or spring harvesting in alternate years, affected vigor less severely than continuous spring or summer harvesting (Cook 1971).

Cook (1971) concluded that desert plants can tolerate only about 25% utilization if grazed annually in the spring, and only 50 to 60% if used every other spring. Grazed during the winter, the same plants could tolerate 50 to 60% utilization annually. Thus, although nutrient levels are higher in spring, only about half the grazing capacity could be obtained from spring grazing compared to winter grazing.

If spring grazing on the Marble Creek allotment were limited to 25% utilization, this limit would likely be reached by late spring and a summer grazing period could not be accommodated. Additionally, late spring and summer grazing would have the most deleterious effect on plants in terms of carbohydrate reserves and long-term vigor.

With regard to sustaining the physiological requirements of plants to maintain themselves and to produce forage, plant vigor at the start of the spring growth period is of critical concern. Grazing should conclude before late spring to provide an opportunity for grazed plants to store carbohydrates and maintain vigor. This is of particular concern if grazing starts in early fall and continues into spring. Plants grazed in the fall or winter, particularly if grazed in excess of 60% use levels, would already be somewhat stressed at the beginning of spring growth [Cook and Child 1971].

The characteristics summarized in Table 1 indicate that the phenology of the important forage species on this allotment also makes them unsuitable to livestock for summer grazing. The spiky or bristly seed heads of the grasses make them undesirable or even injurious to cattle during the summer, and the shrubs are less palatable and/or nutritious during summer than in winter, fall or spring.

Due to the lushness and palatability of herbaceous riparian vegetation, the shade provided by woody riparian species and the availability of water, cattle tend to congregate along streams, particularly in the summer. Cattle can affect each vegetation type in different ways. Cattle use of riparian zones also results in physical damage to the streambank. This can lead to breakage of the soil's structural integrity (bank chiseling and sloughing), soil compaction, accelerated erosion, and dislodgement of plants.

Riparian zone responses to various livestock grazing strategies have been discussed by Elmore (1992), Platts and Nelson (1989), Kovalchik and Elmore(1991), Buckhouse and Elmore (1991) and Meyers (1989). The authors based their observations on various riparian systems; the following are characteristics commonly observed.

Grazing occurs only during plant dormancy, not during the growing period. Browsing and tramping can impact dormant woody species if winter temperatures are moderate or livestock movements are restricted. Recovery from grazing impacts can be dramatic where use is light for various reasons, e.g. if alternate water sources are available (Elmore and Kauffman 1994).

Early Growing Season

Regrowth and establishment of riparian vegetation, especially woody vegetation, may be facilitated by the absence of summer utilization even if use continues into the early growing season. Grazing of woody plants such as willow may be low because upland grasses are green and more palatable. It is important that periods of use allow for adequate regrowth and do not correspond to the timing of willow reproduction (Elmore and Kauffman 1994).

Spring - Summer Grazing or Season Long Grazing

"This strategy typically provides no rest during the growing period for plant vigor, reproduction, or litter accumulation. It generally has resulted in heavy utilization of woody riparian vegetation. Trampling damage, soil compaction, and accelerated streambank erosion are likely. This strategy is most commonly associated with the widespread decline of riparian and watershed conditions in the West. This strategy should be eliminated in most areas where it is still being used" (Elmore and Kauffman 1994).

Management history and recent monitoring

The initial adjudication for the Marble Creek allotment, in 1957, was for a season of use from December 1 to June 15. The Benton-Owens Valley Management Framework Plan (MFP) (BLM 1983) grazing decision for the Marble Creek allotment established the yearlong season of use. There is no record available that indicates why the yearlong season of use was proposed in the MFP.

Historically, as the BLM adjudicated federal grazing privileges and established seasons of use, the grazing needs of the permittee were given consideration as well as the most appropriate time to graze key forage species. Season of use and AUMs were based on Proper Use Factor (PUF) values, which were derived from vegetation research

conducted at USDA Agricultural Research Stations in various types of rangelands throughout the West. The PUFs took into account the physiological requirements of the plant to maintain itself, but were based largely on the palatability (grazing preference) of a given forage species at a specific season for the class of animal grazing. Many range managers no longer consider this method of setting season of use and AUMs to be reliable. Problems include small sample size, extrapolation from a one-time inventory, compounding of errors from several estimates, and disregard of certain site-specific variables such as competitive interactions (Menke and Miller 1984, Menke 1987, Vallentine 1990, J. Willoughby personal communication).

The 1957 adjudication for Marble Creek was for 871 AUMs. A newer forage inventory conducted in 1977-1979 resulted in a revised, slightly lower estimate of total available livestock forage. It also determined that 92% of the allotment (upland) was in "Fair" ecological condition and 8 % in "Poor" condition. There were no areas classified in "Good" or "Excellent" condition. (Ecological condition is the expression of the existing plant community in relation to potential vegetation on a site if it were free of mankind's influence on the landscape.) The report notes that there may have been a trespass problem, so we cannot know exactly what grazing regime resulted in these conditions on the allotment. Stream (fish habitat) surveys conducted during the same time period found the lower part of Marble Creek to be impacted by heavy cattle use, with a lack of shrubs to provide shade or support banks and with bank undercut beaten down by trampling (BLM Bishop FO files).

The 1983 MFP gave the revised estimates of available forage for each allotment but maintained existing AUMs of active preference, noting that adjustments would be made when and if monitoring studies and actual use data verified a need. AUMs of active preference for Marble Creek Allotment were reduced from 871 to 845 as a result of a boundary change that reduced allotment acreage, and 794 AUMs was given as the estimate of available forage. PUF values used in calculating the carrying capacity were for winter and spring grazing only. The MFP neglected to recalculate the estimate using PUF values for the newly proposed yearlong use, which would have given a grazing capacity of 647 AUMs.

The MFP also introduced the provision that grazing use be staggered or restricted on bitterbrush sites and proposed riparian and pasture fencing and a rest-rotation grazing system for improvement of the bitterbrush sites and riparian zone.

The 1993 Bishop RMP did not specifically reanalyze any of the grazing decisions established by the MFP relative to season of use, class of livestock or forage allocation. The BLM determined that those issues had been sufficiently analyzed in the EIS that accompanied the MFP.

The Harris Brothers held the grazing permit for the Marble Creek allotment, and also other permits for Hammil Valley, Adobe Valley and Mathieu allotments, at the time of the MFP decision and transferred all those permits to the Lone Tree Cattle Co. (LTCC) in 1993. The Harris's chose not to make summer use of the Marble Creek allotment, and the allotment was not used at all from 1987 through 1991.

Since acquiring the Marble Creek permit, LTCC's first summer use of the Marble Creek allotment occurred in 1996. This was also the longest period of grazing use to date: 85 cows from 5/5/96 to 2/28/97 and 16 cows from 2/2/97 to 3/2/97, spanning all four seasons except for early spring. That amount of use totaled 833 AUMs, nearly the permitted use of 845 AUMs.

The 1993 RMP requires a residual herbaceous stubble height of 4-6 inches. Utilization monitoring conducted on 2/7/97 along the lower mile of the Marble Creek riparian zone found stubble height of herbaceous vegetation averaged 1.5 inches. The permittee (LTCC) was contacted and was requested to remove all cattle as soon as possible. All cattle were removed by 2/23/97. Upland utilization averaged 36% on 3/6/97 (Table 2).

On 3/6/97 additional monitoring was conducted along the same portion of the riparian zone. The memo to the utilization file noted that some utilization of stems < 1/4" diameter of woody species (wild roses and willows) had occurred in addition to the herbaceous use documented on 2/7/97. The memo expressed that had the cattle been allowed to remain longer, more use of the woody species would have occurred, especially when spring growth commenced. Because this lower portion of the stream has less woody vegetation and is readily accessible to cattle for grazing and watering, it is the most susceptible to grazing impacts.

Utilization monitoring was also conducted on the same date for upland forage species paralleling the creek for its entire length and 1/4 mile width, and south of the creek for 3-4 miles (Table 2). Of particular interest were six key forage plants: desert needlegrass averaged 47%, budsage 16%, winterfat 57%, jointfir 40%, spiny hopsage 19% and antelope bitterbrush 8%. Overall use for the areas sampled was 36% and it was stated that cattle had traversed the sampled areas fairly thoroughly. It was also noted that this was the first time in over 12 years that utilization monitoring had been completed and that this was the longest period of grazing use made to date. Bishop RMP standards set 60% as the maximum allowable utilization level. The new California BLM's Rangeland Health Standards and Guidelines (BLM 1998 2), which were signed by the Secretary of the Interior July 13, 2000, limit utilization in this type of plant community to 30-40%.

As a result of these documented utilization levels, the Bishop Field Office biological and range management staff expressed concerns about the future implications that summer grazing use of the allotment might have with regard to meeting certain RMP vegetative resource objectives. The permittee also expressed several concerns in a letter to the BLM dated 2/25/97. This prompted a meeting on April 4, 1997 which resulted in a written response by the BLM on May 16, 1997 addressing the following issues:

1. The BLM would allow grazing turnout that summer to accommodate the permittee's apparent need to increase his herd size to the numbers required by the Forest Service to fully stock the temporary permit issued to them for the Black Canyon allotment beginning in 1998.

2. The BLM would review the grazing situation on the allotment to determine if the season of use needed to be altered, and if changes were proposed, would initiate the appropriate plan amendment and NEPA process.

3. The BLM would pursue the possibility of fencing Marble Creek to alleviate grazing pressure if upland vegetation objectives could be met.

Summer grazing use was again authorized, for a second consecutive year, for 100 cows 6/27/97 -10/15/97 (365 AUMs or 43% of permitted use).

Utilization monitoring was conducted in August 1997 along the lower mile of Marble Creek, with mean grass heights of 3" along the creek, and in the upland, 39% use (very near the new 40% limit) of desert needlegrass and 7.6% use of bitterbrush. On October 1, 1997 additional utilization monitoring was done in three areas not sampled in March 1997. Two of the areas were high on the alluvial fan, one being north of Marble Creek (33.6% use for needlegrass), and the other area south of the creek surrounding the road to Queen Dicks site (44.7% for needlegrass). The last area was a mile north of the lower reach of Marble Creek behind the private land fence. Use was 52% for needlegrass (Table 2).

In the spring of 1999 the BLM was approached by LTCC and Mr. Rob Blair, the permittee who holds the sole grazing permit for the adjacent Lone Tree allotment and shares the Hammil Valley allotment with LTCC, about the possibility of "trading/exchanging" permitted use, so that the Hammil Valley allotment would be exclusively used by LTCC and that Marble Creek would be shared by Blair and LTCC. The BLM indicated that a change could be authorized, but that the Indian Creek Pipeline on Marble Creek needed repair before any grazing would be allowed. Both permittee parties agreed to that and Mr. Blair was issued a grazing billing for 63 cows from 6/12/99 to 9/30/99. No formal transfer of the grazing privileges for either allotment was made nor was the grazing permits for either party modified, which would have made the requested "trade" officially completed.

Utilization monitoring was conducted on several dates beginning on 6/14/99, two days after cattle turnout, along the lower reach of Marble Creek. The average uncropped height of herbaceous vegetation was 20.2 inches. Thirteen cows were seen along the creek and utilization there was approximately 30-40%. The artificial streambank (soil) alteration rating (SAR) approached 20% and it was recommended that cattle be moved away from the creek by 6/23. On 6/28/99 further monitoring was done in the same area. The overall uncropped herbaceous vegetation height was 4.9 inches. The SAR was 50% which exceeded the RMP limit.

Contact was made with Mr. Blair to have him move cattle well away from the creek and provide water via the Marble Creek and Indian Creek Pipelines, which would allow for grazing use in the center and southern portions of the allotment.

On 8/2/99 another riparian utilization inspection was made which indicated 2.9 inches of remaining stubble height and a SAR of 65%. On 8/19/99 upland forage utilization was conducted. Three transects were done in areas north and south of the middle length of the creek. Utilization on desert needlegrass ranged between 20-42%. The last utilization monitoring for 1999 was conducted on October 20 in upland vegetation east of the Marble Creek Pipeline. Utilization on desert needlegrass ranged from 19-35%.

On September 15, 1999 the BLM informed Mr. Blair and LTCC by letter that the permanent transfer of AUMs would be denied pending completion of an RMP amendment to reconsider the appropriate season of use. It further stated that the transfer of AUMs would be reconsidered following completion of the RMP amendment process in May 2000. A Notice of Intent to Amend the Bishop RMP was published in the Federal Register on October 22, 1999.

On May 3, 2000 BLM Bishop Field Office range, wildlife and botany staff, a BLM State Office rangeland management specialist, a Natural Resource Conservation Service representative and the permittee and his consultant conducted an allotment assessment to determine whether the Rangeland Health Standards and Guidelines (BLM 1998 2) are being met on four representative sites. On the two upland sites, all applicable standards were met. Overall ecological function was excellent on SWA #680 (mule deer winter range). On SWA #653, a lower elevation site, vegetation vigor, form and structure were good. On the upper riparian site (within SWA #679), applicable riparian standards were met. On the lower riparian site (within SWA 681), none of the applicable standards were met. Soils along the stream bank showed evidence of chiseling and sloughing; species diversity was less than along the upper reach; plant structure and composition were poor, with only one species of willow, *Salix exigua*, represented; stream shading was inadequate; and suspended sediments were evident in the water column, affecting water quality (Attachment 1).

Synopsis of Monitoring Data

The May 1996 to March 1997 use period was the highest amount of grazing use (833 AUMs, or 99% of permitted use) and the longest period of grazing use (85 cows for 10 months). This use encompassed the summer months for the first time in at least 15 years. In March 1997 some utilization of <1/4" stems of wild roses and willows had occurred and average remaining stubble height of herbaceous riparian vegetation was 1.5 inches, much less than the RMP criterion of 4-6 inches. Use of key upland forage species averaged 36%, well within the 60% then allowed by the RMP but approaching the 40% maximum allowed under the new Standards and Guidelines (BLM 1998), and three key species were grazed at levels ≥40%. Had grazing use continued through the spring, utilization of upland species would likely have exceeded 60%.

Summer grazing use occurred again from the end of June until mid-October 1997. Monitoring conducted in August revealed an average riparian stubble height of 3 inches, and in the upland, 39% use of desert needlegrass. By October 1, desert needlegrass utilization levels ranged from 34-52%. The stocking rate during this period was 100 cows (365 AUMs or 43% of permitted use).

Utilization monitoring in June 1999 revealed that after only 2 weeks of summer grazing use, average herbaceous riparian stubble height was 4.9 inches and the soil alteration rating (SAR) was 50%. By August 2 the stubble height was 2.9 inches and by August 19 the use of upland species was 20-42%. The stocking rate during this period was 63 cows (230 AUMs or 27% of permitted use).

It is apparent that during the summer the residual herbaceous stubble height requirement of 4-6 inches remaining along the creek is quickly exceeded, even at stocking rates well below the permitted AUMs. This would indicate that, in the riparian area, standards cannot be met and improvement in vegetation condition cannot be achieved if summer grazing continues.

In the upland, yearlong grazing at 99% of the permitted stocking rate exceeded the new Rangeland Health Standards and Guidelines maximum on three key species after only 10 months; and summer/fall grazing at 43% of stocking rate exceeded the Standards and Guidelines maximum after just over 3 months. With yearlong grazing at any but very low stocking levels, upland use limits would be exceeded at some point and BLM would require that livestock be removed.

Upland range conditions were assessed as “poor” to “fair” in the 1977-79 forage inventory and “good” to “excellent” (using different methods and standards) in the 2000 Rangeland Health Assessment (Attachment 1). Apparently lower stocking rates and the 5-year period of non-use prior to 1992 facilitated an improvement in upland range condition. In the long term, year-after-year summer use combined with spring use and at use levels greater than 40% would likely result in long-term degradation of plant vigor and range condition, as indicated by the research literature cited above. Riparian conditions in the lower reach also improved somewhat during periods of lighter use and non-use but continued to show signs of vegetation and soil degradation.

Description of Proposed Action

Under the proposed action, the degraded lower reach of Marble Creek will be fenced to exclude cattle and a grazing strategy will be prescribed.

This action will entail constructing barbed wire fence to enclose about one mile of Marble Creek, in the downstream part which is not protected by mature willows. The fence will be temporary, until willows mature enough to function as a fence. Based on observations of the 1987 exclosure, this will be at least 15-20 years and possibly more depending on such factors as precipitation and willow recruitment and growth rates. Below the 1987 exclosure, 1.2 mile remains unfenced. Under the proposed action most of the remainder will be fenced at once, to expedite recovery. Fencing one mile will end the fence above an unimproved road crossing the stream, allowing vehicles and livestock to cross unimpeded. The stream will remain accessible to cattle at several points above the fence as well as the unfenced 0.2 mile below it. Fence width will be 100 feet or less.

BLM will provide materials and construct the fence. The permittee will be responsible for maintenance. Use of the allotment will be contingent upon the fence being in place, and subsequently upon its proper maintenance.

The fence will be constructed in conformance with objectives and specifications in Bureau Manual 1737, with 3 strands of wire spaced so as to allow mule deer and pronghorn access. Wire location from the ground up will be 16", 26" and 38". The top strand will be smooth wire to minimize risk to deer; second and third strands would be 2-point barbed wire. The distance between metal "T" posts will be 16.5' plus/minus 1 to 2' depending on rocky soil conditions. Green steel fence posts will be used to minimize visual contrast. Fence post height will be about 4 feet. Work will be conducted using hand tools and with no off-road vehicle travel. No vegetation will be removed, other than minor pruning of shrubs to allow proper wire spacing. The fence will be inspected annually at a minimum and maintained as necessary.

Lone Tree Cattle Co. (LTCC) and their range consultant have proposed a grazing strategy/schedule to address all of LTCC's allotments which provides for a 6-year cycle for Marble Creek (Alternative B). LTCC subsequently requested that we only consider the schedule for Marble Creek Allotment in this EA. The schedule presented below as part of the proposed action is a variation based on LTCC's proposal but using a 3-year cycle.

Year 1 **Summer Use**

On Date	*Off Date*	*Days*	*Cattle No.*	*AUMs used*
7/1	*9/15*	*77*	*214*	*542*

Year 1 **No Fall/Winter Use**

Year 2 **No Spring/Summer Use**

Year 2 **Fall/Winter Use**

On Date	*Off Date*	*Days*	*Cattle No.*	*AUMs used*
11/1	*2/28*	*120*	*214*	*844*

Year 3 **No Spring/Summer Use**

Year 3 **Fall/Winter Use**

On Date	*Off Date*	*Days*	*Cattle No.*	*AUMs used*
11/1	*2/28*	*120*	*214*	*844*

The grazing cycle will repeat itself, with the same sequence every 3 years. For instance, if year 1 were 2001, in 2004 summer grazing would start 7/1/04 and conclude 9/15/04.

Environmental Impacts of Proposed Action

Upland Vegetation:

During one year in three there would be livestock grazing during the summer (July through mid-September) or until 40% use of upland species occurs or 20% is reached on bitterbrush within the key mule deer winter range portions of the allotment, as per Rangeland Health Standards and Guidelines.

The periods for recovery from that use period correlate with critical periods for plant growth and restoration of plant vigor. There would be a 13.5 month period of rest/recovery from grazing beginning in fall of Year 1. This takes advantage of a full winter through spring moisture period. In year 2, grazing would begin in late fall, continue through the winter plant dormancy period and conclude before the start of spring growth, followed by an additional eight and one half months of deferment. The three-year cycle would end with fall/winter grazing followed by four months of deferment. This rotation would likely simulate Cook's findings showing that continuous winter harvesting, or spring harvesting in alternate years, affected vigor less severely than continuous spring or summer harvesting (Cook 1971).

By not receiving consecutive spring and summer grazing, cryptobiotic soil crusts would benefit from less crust trampling and subsequent reduction in nutrient cycling and microsite availability.

Without access to riparian vegetation in the fenced mile during periods of use, cattle may rely more upon upland vegetation than under the proposed action. However, this alternative, which combines the 40% use levels and no summer grazing in any two consecutive years, would still allow for a biologically sound maintenance of plant vigor by altering the timing and intensity of use over a multiple year/growing season period. Marble Creek has alternate livestock watering systems at a distance from the creek: Marble Creek Pipeline #7557 and Indian Creek Pipeline #7548 (Map 1). These pipelines allow grazing of upland forage to be distributed over a considerable area. Thus, any use displaced from riparian to upland would likely be well distributed and less problematic. Under the new Rangeland Health Standards and Guidelines livestock will be removed from any allotment at any time if a 40% utilization level is reached (or when conditions such as drought preclude grazing), regardless of grazing schedule.

***Riparian DPC and PFC, Soils and Streambank Integrity*:** The proposed action will exclude cattle from the degraded lower reach of the stream, accelerating establishment of riparian vegetation (willows, roses and herbaceous understory), allowing stream banks to recover and woody vegetation to be established as per Desired Plant Community (DPC) goals. The proposed action will reverse the soil compaction, chiseling and erosion that currently occur along the banks of the lower reach by eliminating livestock trampling and by promoting the growth of vegetation that will aid in holding soil in place. These effects, together with improvements in vegetation, are expected to result in a trend toward achieving Proper Functioning Condition (PFC) along the lower reach.

DPC and PFC goals are currently met on the upper reach of the stream and are likely to be maintained under the proposed action, despite displacement of use from the fenced area to the upper reaches. Well-established woody vegetation effectively fences the stream and armors the banks with its roots throughout most of this reach. Limiting summer grazing to one year in three, and not beginning until July, will provide additional protection during the growing period when vegetation is most vulnerable. The schedule provides for two years of deferment following each year of summer grazing, allowing vegetation to recover and stream banks time to regain some of the vegetative armoring that helps hold them in place.

Invasive or non-native plant species: The proposed action may bring about a beneficial reduction of invasive or non-native plant species as a result of maintaining or improving the vegetative condition throughout the allotment.

Wildlife habitat: The accelerated improvement to the downstream segment of Marble Creek described above would benefit riparian-dependent wildlife. There would be some risk of wildlife colliding with or becoming entangled in barbed wire, although the fence is designed to minimize hazard and maximize access for wildlife known to use the area.

The most critical period of the breeding season for songbird species begins with the laying of the first egg. The Eastern Sierra Riparian Songbird study has identified bird species breeding at Marble Creek and has conducted nest

monitoring at similar habitats in the Owens Valley. Data collected at the Owens Valley sites in 1999 show April 28 as the earliest egg-laying initiation date for an individual of a species that also bred at Marble Creek, and July 20 as the latest. Under the proposed grazing strategy, cattle would be on the allotment and in proximity to the stream during part of the critical bird breeding season in year 1 of the cycle, when grazing begins in July. During the other two years of the cycle cattle would be absent from two months before the start of the breeding season to five months after it ends.

The proposed action is expected to benefit riparian breeding songbirds in five ways:

1) Fencing will allow woody vegetation to become established along the lower mile of the stream, extending the area benefiting from the positive correlations between woody vegetation and bird abundance and diversity observed by Heath and Ballard (2000).

2) Understory vegetation, both annual and perennial, will provide more cover during the breeding season. Two thirds of the bird species that breed at Marble Creek, including five USFWS Species of Management Concern and two CPIF RHJV Riparian Focal Species, make their nests in low vegetation or on the ground (S. Heath pers. comm.). Understory cover provides shelter from weather and concealment from predators. Understory vegetation will be completely protected within the fence. In the upper reach the understory is inaccessible in most places; where accessible, ending the grazing season of use on February 28 will allow the understory to grow sufficiently to protect most nests.

3) Nests will be less likely to be directly trampled by cows. Seven bird species breeding at Marble Creek place their nests directly on the ground or so near the ground as to be vulnerable to trampling (S. Heath pers. comm.)

4) Birds will be less vulnerable to nest parasitism by brown-headed cowbirds, which lay their eggs in other birds' nests at the expense of host offspring's survival. Brown-headed cowbirds commonly forage near livestock and/or in areas with little herbaceous cover, and locate nests more readily when there is less cover. Rates of cowbird parasitism increase with decreasing distances to feeding areas (Goguen and Mathews 1999, Halterman and Laymon 1999). Cowbirds bred at Marble Creek in 1998 and 1999 and were more numerous than would be expected at an area further removed from grazing (G. Ballard pers. comm.). Under the proposed action herbaceous cover will increase, and proximity to livestock will decrease except in July of one year out of three.

5) Any increase in riparian vegetation will result in an increase in production of insects, flower nectar, fruits and seeds used by songbirds as food.

Marble Creek also provides habitat for birds during migration. In 1998 and 1999 6 migrating species, including 2 CPIF RHJV Riparian Focal Species, used Marble Creek's riparian habitat (Heath and Ballard 2000). Migrants are expected to benefit from increased cover and food production. Benefits for birds breeding in the upland portions of the allotment are expected to be similar to those accrued by riparian birds, but on a lesser scale because both bird use and cattle impacts are concentrated in the riparian area.

Mule deer and mountain lions, along with various small mammals and reptiles, may also benefit from an increase in riparian vegetation. Non-native brown trout may benefit from increased shade, insect production and bank stability. The proposed action is not expected to affect the supply of bitterbrush for mule deer. Livestock use of bitterbrush on mule deer winter range is specifically monitored and regulated under utilization standards to ensure that mule deer's needs are met.

Listed and sensitive species: There will be no impact to listed species. There are no known listed species or habitats within the proposed action area. Impacts to bird species of concern are described above. There are no other sensitive animal or plant species or habitats known for the allotment.

Water quality: The project will somewhat improve water quality in Marble Creek by decreasing sedimentation and fouling by livestock.

Cultural resources: An archaeological reconnaissance of the fence project area was conducted on 9 October 1997 and 22 January 1998, by Field Office archaeologist Kirk Halford. One historic site and two isolated finds were recorded. The site is located in an area that was heavily used by bedding cattle. The fence line may run along the southern edge of the site, but the site does not meet any criteria for eligibility to the National Register of Historic Places (NRHP). The proposed action would have no effect to any historical properties which are or may be potentially eligible for the NRHP.

Visual resources: The fence would meet Visual Resource Management (VRM) Class 2 standards established for this area by the RMP, requiring that any change to the natural landscape must be inconspicuous to the casual observer (appendix 3, page A3-1). The key observation point is U.S. Highway 6. The fenced area will begin about ½ mile above the highway and continue perpendicular to the highway. The green fence posts will be slightly taller than surrounding upland vegetation but lower than potential riparian vegetation Because of the distance and fence design, the fence is expected to be very inconspicuous from the highway.

Vehicle access: Vehicle routes in the vicinity of the proposed action were inventoried as part of the High Desert Off-Highway Vehicle Project. This action would have no effect on vehicle access. The fence would not cross any existing routes and would end upstream of the only existing stream crossing near the project area.

Impacts to the permittee: This action would provide an overall grazing plan to LTCC's operations and assist with their planning, operations and financial decision making capability. The proposed action's grazing strategy is a variation on one proposed by the permittee (see Alternative B). It differs in that the permittee's strategy calls for summer grazing at Marble Creek three years in six; under the proposed action the permittee will use Adobe Valley (or make other arrangements) for summer grazing one year in six. The reduction in summer grazing (as compared to the "No Action" alternative) is not expected to have a significant negative impact to LTCC since they have only had summer use on this allotment twice during the past 7 years.

The permittee will benefit from fencing of the degraded riparian area because, in the past, concentrated use of this area has resulted in cattle being turned off of the allotment earlier than would be expected if use were distributed throughout the upland. The proposed action is expected to benefit the permittee by decreasing the probability that upland or riparian utilization levels or standards and guidelines will be exceeded during the authorized use period, thus enabling greater ease of planning; by establishing times of use to correspond with seasons when plant phenology best suits the needs of cattle; and by maintaining the long-term productivity of the allotment. Negative impacts to the permittee include the workload of fence construction and maintenance.

Impacts to farmlands: The owner and the lessee of the Harris Ranch, an alfalfa farm which uses Marble Creek water, have expressed two concerns with regard to fencing the stream: 1) The amount of labor needed to maintain the flow of water to the farm would increase substantially; and 2) Riparian vegetation, especially willows, would use so much water as to substantially reduce the amount flowing to the farm.

Marble Creek Exclosure project file 7660 includes correspondence from former ranch owner Bill Harris asserting that the lower portion of the stream (including the project area) is in an artificially created course maintained as a ditch to convey water to the ranch. In correspondence dated 10 February 1994, BLM recognized the following as "historic and annual maintenance on Marble Creek under the authority of the Act of 1866 (43 U.S.C. 661):

"1. Keeping stream banks intact to convey water down channel by placing soil in those places where water has or is running out of the main channel to a secondary drainage.
"2. Any debris (brush, sticks, rocks) which naturally falls into the stream channel be removed by hand with no change to the existing channel or riparian vegetation occurring.
"3. Removal of willow or other root balls which are now in the channel and causing the channel bed to be slowly elevated over time."

The ranch owner and lessee anticipate that this work would need to be done more frequently, and access to the stream channel would become more difficult, as more willows grow as a result of the project. As part of this project BLM agrees to engage a California Department of Forestry work crew to perform this work annually, before the start of the growing season.

Regarding the amount of water potentially used by new willow growth, the Inyo County Water Department's vegetation staff uses a value of 4 acre-feet per year for each acre of solid stand of willow (Robinson 1958) to derive rough calculations of water used by all willow species. Four acre-feet is equivalent to 1,303,315 gallons.

The mean width of Marble Creek's potential riparian strip within the proposed fence area is 34 feet. Approximately 35% of the mile-long proposed fence area already has large clumps of willow. Thus 65% of one mile might potentially gain a solid stand of willow averaging 34 feet in width, or an area of 2.68 acres, over the course of many years. This is a high estimate because it is unlikely that a solid stand would ever be attained: less water-consumptive riparian vegetation such as roses, grasses, etc. would compete with willows and dominate in some segments.

According to his note in our files, Bill Harris in 1968 measured flows just above the ranch ranging from 1086 gallons per minute (GPM) on May 19 to 475 GPM on August 31. For a very conservative estimate that would account for drier years, we calculated that annual flows averaging 100 GPM would deliver 52,560,000 gallons to the ranch per year.

Applying this low flow estimate to the high willow growth estimate of 2.68 acres gives an estimated maximum of 6.6% of available water used by new willow growth. It is probable that actual flows would be greater and actual willow growth would be less, resulting in a lower percentage of available water used. The exact percentage used would depend upon variables such as species of willow, soil porosity, gradient, and evaporation rates.

Other impacts: The proposed action is not within a Wilderness, Wilderness Study Area, Area of Critical Environmental Concern, nor Wild and Scenic River corridor, and there will be no effects on any lands so designated. Air quality will not be affected. The proposed action is not within a federal non-attainment area. There will be no impacts to flood plains or groundwater quality. There will be no disproportionate impacts to low income or minority groups, per Executive Order 12898 (2/11/94). There will be no impacts to mineral resources.

Cumulative effects: Cumulative effects are direct or indirect effects that result from an action when considered with other past, present and reasonably foreseeable future actions of the agency and other agencies or private parties. The fence is expected to contribute to positive cumulative effects by continuing the increase in riparian vegetation begun by fencing a short section in 1987. The grazing schedule may benefit the vegetative resources of the other LTCC allotments of Hammil Valley and Mathieu and their Fish Slough lease by enabling their grazing use to be staggered with the Marble Creek periods. This rotation of grazing use between early spring, summer and fall/winter may benefit plant communities within all the allotments because it does not schedule consecutive back-to-back use of the same areas and plant communities, thus allowing for periods of deferment that are essential for plant recovery and vigor.

Implementation Monitoring

BLM resource staff will conduct annual monitoring at a minimum to verify that the fence is properly maintained, and occasional spot checks to confirm that no cattle are within the fence at any time, or on the allotment outside of the times specified by the grazing plan.

Effectiveness Monitoring

Vegetation monitoring will be conducted to determine utilization levels on key upland forage species and on riparian species in the unfenced upper reach of Marble Creek.

PFC (Proper Functioning Condition) and DPC (Desired Plant Community) assessments will be conducted. The intensive stream monitoring stations will also be reassessed. This monitoring will be conducted as necessary to document any apparent changes in condition.

The Eastern Sierra Riparian Songbird project will continue monitoring through at least 2001 to track the effects of management changes. After the project concludes, Bishop Field Office biologists will continue to monitor the Marble Creek point count transect according to the same protocol, annually if possible and at least once every three

years; repeat the habitat assessment at least once every six years; and examine the relationship between any changes in bird community and changes in vegetation.

Alternative A: No Action

Under this alternative, no fence would be constructed, no grazing strategy would be implemented and the season of use would not be changed from yearlong. The permitted use would remain at 845 AUMs. This would provide for grazing 70 cattle (cow/calf pairs or adult/weaned animals only) for 12 months. Utilization limits would be reached at some point during the year, resulting in BLM requiring that the permittee remove the livestock at that point.

Impacts of Alternative A

This alternative would allow for year-long use which is not sustainable for plant communities in the Great Basin and Mojave regions. Upland plant phenology has not evolved with such use levels and implementation of this alternative would have long-term ecological impacts that would degrade the resources within this allotment. Continuous use would result in the loss of the extensive higher elevation perennial grass component, and a reduction in overall perennial upland and riparian shrub species cover, structure and composition.

The riparian reaches of Marble Creek, especially those areas with inadequate vegetative and geomorphic armoring, would receive the bulk of the impacts due to cattle continuously seeking shade, succulent forage and water. No improvement in riparian vegetation or stream bank condition could be expected and further degradation would result, particularly along the lower 1 mile of Marble Creek. Under this alternative RMP decisions calling for improvement of riparian conditions on Marble Creek, including DPC goals, would not be implemented and Proper Functioning Condition would not be achieved. Given the DPC goal of establishing woody species along the lower one mile of the creek, the existing woody species (willow and rose) are unlikely to become better established as long as cattle have access to that reach at any time of year. Continued summer use would not only prevent establishment of woody species and accelerate stream bank damage along the lower reach of Marble Creek, but would very likely result in negatively impacting the present good condition of the upper reach.

The Harris Ranch would not be affected under this alternative.

Alternative B: Fencing and 6-Year Grazing Cycle

This alternative includes fencing the stream and implementing a grazing schedule as in the proposed action, but the schedule is identical to that proposed by the permittee and consultants. It follows a 6-year cycle. Years 1 and 2 are as shown above. Year 3 calls for June-July grazing of Marble Creek:

Year 3	**Spring/Summer Use**				
On Date	***Off Date***		***Days***	***Cattle No.***	***AUMs used***
6/1	*7/31*	*61*	*214*	*429*	

Years 4-6 are identical to years 1-3 of Alternative B.

Thus, under Alternative B, summer grazing could occur in years 1, 3, and 4 of each 6-year cycle (three out of six summers, as compared to one in three summers under the preferred alternative.)

Year	Summer grazing - Proposed Action	Summer grazing - Alternative B
1	Yes (July 1 - September 15)	Yes (July 1 - September 15)
2	No	No
3	No	Yes (June 1 - July 31)
4	Yes (July 1 - September 15)	Yes (July 1 - September 15)
5	No	No
6	No	No

Impacts of Alternative B

***Upland vegetation, Alternative B*:** As with the proposed action, during one year in three there would be livestock grazing during July through mid-September, or until 40% use of upland species occurs and 20% is reached on bitterbrush within the key mule deer winter range portions of the allotment. This alternative also allows for June-July grazing in one year out of six, resulting in two consecutive years of summer use. The year with June-July grazing also has grazing ending in February and beginning again in November.

The use periods under Alternative B would not allow for adequate rest/recovery from grazing use given the environmental site conditions. Alternative B would allow for a reduction in the amount of biomass available for photosynthesis due to more frequent summer and subsequent fall grazing periods, despite the 40% use limit specified by the Rangeland Health Standards and Guidelines. The reduction in biomass would be commensurate with a reduction in plant carbohydrate storage necessary for adequate annual production. Long term effects may include a reduction in reproductive capacity of upland species, changes in community composition and structure and an increase in invasive species.

Riparian, stream and wildlife, Alternative B: Because the lower reach would be fenced under both this and the proposed action, effects on streambank integrity and riparian vegetation would be similar within that reach. However, the upstream reach would be subjected to grazing pressure during the growing season three years out of six instead of two; the additional year's grazing would begin in June during the height of the growing season; and this year would be immediately followed by another summer grazing year, limiting recovery time for riparian vegetation and for streambank armoring. This combination of factors makes the upstream reach considerably more likely to incur degradation of vegetation and streambank conditions under Alternative B as compared to the proposed action.

Any such degradation would also affect riparian-dependent wildlife. Understory vegetation is likely to be reduced in the upstream reach under this alternative as compared to the preferred action, with a corresponding loss of cover for riparian-breeding songbirds and other small animals. June-July grazing corresponds with the height of the songbird breeding season and loss of understory vegetation is especially likely to be detrimental during this time. Also, the proximity of cattle during this time will increase the likelihood of cowbird parasitism.

Impacts to the permittee, Alternative B: This alternative is identical to the strategy originally proposed by the permittee. See the discussion under Proposed Action.

Impacts to farmlands: Construction of the fence would facilitate the growth of riparian vegetation and commensurate water consumption over time. (See estimate of water use under Proposed Action.) The Harris Ranch would likely experience a decrease in water flow as a result, which may negatively impact its agricultural production. Maintenance of the channel to maintain water flows may become more difficult to perform as vegetation becomes established along it. Access within the fenced area may become difficult and may necessitate providing a series of gates in the fence and regular removal of vegetation to provide access routes to reach the channel for maintenance. New travel routes may need to be established to access these gates.

Cumulative impacts, Alternative B: Cumulative impacts would be similar to those under the Proposed action, except that it would likely be somewhat more beneficial to the Adobe Valley allotment by transferring summer use to the Marble Creek allotment during the additional one year in six.

Other impacts are the same as described for the Proposed Action.

Alternative C: No Summer Grazing

This alternative would permanently change the livestock grazing season of use from yearlong to October 1 through May 15, through a plan amendment to the RMP. Should the Plan Amendment be approved, the grazing permit of the existing permittee, Lone Tree Cattle Co., would be modified accordingly.

Plan conformance: Because the season of use is specified by the RMP, this alternative is ***not in conformance*** with the RMP and would require a plan amendment. Also, this alternative ***does not address*** the following RMP decisions:

Standard Operating Procedures, Riparian and Wetland, page 13: "Rehabilitate or fence riparian areas that consistently show resource damage from any cause if conflicts cannot be resolved in another manner."

Benton Management Area, page 42: "Stabilize and restore portions of...Marble Creek to improve riparian and aquatic habitat quality. Restore streambank stability and channel morphology. Improve riparian vegetation conditions. Meet DPC goals on 20 acres (100%) of riparian habitat."

Desired Plant Community (DPC) for Riparian Vegetation, Appendix 1, pages A1-6 and A1-7.

Impacts of Alternative C

Upland vegetation, Alternative C: Alternative C would increase the time of cattle use during critical spring upland plant growth (March-May) to every year compared to the proposed action. Consecutive spring use year after year even with lower use levels will likely compromise the ecological function of the upland plant community by 1) reducing the capacity of upland grasses to store enough carbohydrate reserves from fall/winter use to have adequate compensatory regrowth in spring, and 2) reducing the capacity of these species to regrow enough photosynthetic biomass by their peak reproductive period (June/July). The proposed action in contrast allows the upland community to be used infrequently and during different seasons which will allow for recovery of plant biomass and recruitment within the extent of natural climatic regimes. Under this alternative no summer use would likely only benefit those species that hadn't already been consumed in spring, since regrowth on consumed plants would not occur unless summer precipitation levels were higher. These already utilized species would then again be subjected to fall/winter use potentially leaving inadequate residual biomass.

Cryptobiotic soil crusts would incur more impact under this alternative than the proposed action because the most biologically active period for the organisms of this life form is between late February and March. Year after year use during this critical period is likely, over time, to degrade the expanse and the intact nature of this component on the allotment.

Riparian, stream and wildlife, Alternative C: As compared to the proposed action, the degraded lower reach of Marble Creek would recover much more slowly if at all. Unfenced, it might be able to maintain its current condition or even undergo some improvement. But cattle would be expected to congregate here during any time they are present. Impacts to the streambanks of trampling, chiseling and compaction would continue regardless of season of use. Woody vegetation would continue to be grazed during the early part of the growing season and, given its current scarcity on this reach, would be unlikely to become well-established. Under this alternative, PFC and DPC conditions would not likely be attained on the lower reach as required by RMP decisions. Water quality would not be likely to appreciably improve.

Data collected at these sites in 1999 show April 28 as the earliest egg-laying date for an individual of a species that also bred at Marble Creek. Four other species that bred at Marble Creek also had individuals initiating egg-laying on or prior to May 15. Mean dates of first egg were prior to May 15 for only two of these species. Mean dates of egg initiation for other species that breed at Marble Creek, including all species of special management concern, ranged from May 21 through July 20 (Heath and Ballard 2000). Thus, data currently available suggest that Alternative C would result in cattle being removed prior to the onset of egg-laying for most individuals of most species in the Marble Creek breeding bird community. The proximity of brown-headed cowbird feeding areas to the riparian area would be reduced and a corresponding decrease in cowbird parasitism would be expected. However, cattle could be present during the early growing season for riparian vegetation every year and would reduce understory cover at the beginning of the breeding season. The lower stream reach, unfenced, would not have the opportunity to develop

woody vegetation and the structural complexity that constitute good riparian breeding bird habitat. The benefits of reduced cowbird proximity are outweighed by the loss of opportunity to regain good vegetative structure as compared to the proposed action.

Impacts to the permittee, Alternative C: Under any alternative, the permittee will have to remove cattle from the allotment as soon as riparian or upland use limits are met. Without the fence, riparian use limits would likely be met while upland forage would otherwise still be available. The permittee could also be affected by poorer allotment condition reduced upland plant vigor over time.

Cumulative impacts, Alternative C: With no summer use on the Marble Creek Allotment, upland vegetation on other allotments would receive more intense and frequent use during critical growth periods which could precipitate a long term reduction in plant vigor and plant community function. These impacts would likely be even more apparent on those allotments, e.g. Adobe, which lack Marble Creek Allotment's elevational gradients, diversity of plant communities, and greater capacity for cattle dispersion.

Other impacts would be negligible or absent.

Alternatives Considered and Dropped from Further Analysis

Alternative D: Full implementation of existing MFP/RMP decisions

The 1993 Bishop RMP carries forward the following actions from the 1983 MFP:

> Develop an Allotment Management Plan for the Marble Creek Allotment to improve mule deer winter range and meet the goals of the Casa Diablo Deer Herd Management Plan. (Benton Management Area Support Needs, page 40)
>
> Develop identified water facilities north of Marble Creek on allotment 6025, fence both sides of Marble Creek for a distance of three miles, and build three miles of pasture division fence. (Livestock Grazing Decisions, page 61)

These decisions addressed the contingency that the allotment might someday be stocked to its full rated capacity. Fencing the entire length of Marble Creek (except for road crossings and watering access points) would serve the dual purpose of completely excluding cattle from the stream and riparian area, and dividing the allotment into two pastures so that cattle could be excluded from the bitterbrush area if necessary for managing the mule deer winter range. Water facilities north of the stream would improve cattle distribution in the northern pasture thus created.

At this time, the upper reach of the stream and the bitterbrush area do not require additional protection sufficiently to justify requiring the permittee to construct and maintain more than six miles of fencing on rocky alluvial soil. The upper stream reach is effectively fenced by mature willows, and the bitterbrush area is not in degraded condition. An AMP to improve the winter range is not needed. This alternative is therefore dropped from further analysis. These RMP decisions remain in place and will be fully analyzed if a need to implement them arises in the future.

Alternative E: Adjust AUMs using yearlong PUF values

If the method of setting AUMs using PUF values adequately accounted for the physiological needs of the key forage species to rest from grazing during the summer months, then continuing to allow yearlong grazing but reducing AUMs to the capacity calculated by yearlong values would be a viable option. The resulting 647 AUMs would be a 23% reduction from the 845 currently allowed and would provide for grazing 54 cattle (cow/calf pairs or adult and weaned animals only) for 12 months.

Based on information summarized under "Need for Proposed Action" above, including weaknesses of the PUF method, newer research and on-site monitoring, we consider the proposed action to be a more effective way to maintain upland plant vigor. This alternative would not address stream/riparian issues. Nor would it improve the ability to plan grazing use. Therefore this alternative is dropped from further analysis.

Persons/Agencies Consulted

Ken Zimmerman and Tom Peek, Lone Tree Cattle Co.
Jack Alexander, range consultant for Lone Tree Cattle Co.
Joe Harris, owner of Harris Ranch

Preparers

Mark Gish, Range Conservationist
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Kirk Halford, Archaeologist
Jim Jennings, Outdoor Recreation Specialist
Joseph Pollini, Visual Resources Specialist
Larry Primosch, Realty Specialist
Terry Russi, Supervisory Wildlife Biologist
Bill Dunkelberger, Field Manager

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Attachment 1. Rangeland Health Assessment

Synopsis of Allotment Evaluation for Marble Creek (6025)

Date of Assessment: May 3, 2000
Participants: Mark Gish, Rangeland Management Specialist
Terry Russi, Supervisory Wildlife Biologist
Joy Fatooh, Wildlife Biologist
Anne Halford, Botanist
Ken Zimmerman, Allotment Permittee
Jack Alexander, Consultant
Dianna Brink, BLM State Office Rangeland Management Specialist
Leonard Jolly, Natural Resource Conservation Service (NRCS)

Map production: Steve Nelson - Ecologist/GIS Coordinator

Assessment Methods

To facilitate delineations of ecological and cultural importance within the Marble Creek Allotment specific stratification criteria were used to include; NRCS soil map units, vegetation Site Write-Up Areas (SWA's), mule deer winter range, bighorn sheep winter range, riparian buffers of ½ mile and cultural site locations. Specific locations within these areas were visited excluding the cultural sites to assess the Rangeland Health Standards and Guidelines. Each item on the assessment form was discussed and final decisions were reached through group consensus.

Assessment Results

Site 1: Gravelly Sandy Fan. SWA # 680. Mule Deer Winter Range. All applicable standards were met at this site and overall ecological function, especially with regard to plant composition and structure was excellent. Shrubs comprised 75% of the plant canopy cover, grasses 15% and forbs 10%. Species composition was highly varied with 21 species represented. Very little evidence of cattle use was apparent.

Site 2: Granitic Slope. SWA # 679. Riparian Buffer. The applicable riparian standards on this portion of the stream reach were met. Improvement in this reach was noted with regard to the decrease in decadent willow, primarily *Salix lutea.* The streambanks of this reach are well armored with dense willow roots and large boulders which apparently serve as effective barriers to cattle entry.

Site 3: Granitic Slope. SWA # 681. Riparian Buffer. All of the applicable riparian standards were not met on this reach.

- Soils along the stream bank showed evidence of chiseling and sloughing.
- Species diversity was significantly less than along other reaches of Marble Creek.
- Plant structure and composition were poor with only one species of willow, *Salix exigua*, represented.
- Stream shading was inadequate.
- Suspended sediments were evident in the water column and affecting water quality.

In 1993, the entire drainage of Marble Creek was assessed for Riparian Functioning Condition and at this time a Functioning at Risk designation was given. Current conditions, at least at site 3 indicate that improvement is not occurring. Although improvement is evident in the upper portions of the creek, the lower reaches still require recovery and progression towards an upward trend to meet Rangeland Health Standards and Guidelines and Bishop RMP objectives.

Site 4: Loamy Sand. SWA # 653. All applicable standards were met at this site. General ecological capacity for this site with regard to understory grass composition is inherently lower than higher elevation ecological sites. Shrubs comprised 95% of the canopy cover, grasses 5% and only trace amounts of forbs were present. Overall condition of the vegetation, e.g. vigor, form and structure were good.

FINDING OF NO SIGNIFICANT IMPACT/DECISION RECORD

I have reviewed this environmental assessment, which proposes to fence the lower reach of Marble Creek and implement a grazing system on Marble Creek Allotment that would include summer grazing in only one year out of three. I find that this EA adequately documents research and monitoring data indicating that this action is needed and will benefit rangeland health, riparian conditions, stream function and wildlife habitat on the allotment, without significant impacts to other resources.

However, I choose to partially implement the Proposed Action as described in this EA. The specific components of my decision include: 1) adoption of the three-year grazing schedule outlined on page 11 of the EA. Because the Interior Board of Land Appeals (IBLA) has granted a stay on construction of the fence, I am deferring construction of any portion of the fence. I have actively pursued consultation and coordination with the downstream agricultural water user to address concerns regarding water flow maintenance and potential decrease in water flows to the Harris Ranch which could result after building the fence. 2) Grazing under the new schedule adopted herein may occur commensurate with the newly adopted grazing schedule. 3) All mitigation measures described under the Proposed Action pertaining to monitoring will be implemented.

Research shows that the key upland forage species on this allotment are not well suited for summer grazing, in terms of both livestock preference and long-term plant vigor; and that summer grazing is clearly detrimental to riparian areas.

Monitoring shows that the upland environment is currently in good condition, apparently as a result of several years of nonuse followed by diligent monitoring and implementation of utilization standards. Grazing during one summer out of three is not expected to be significantly detrimental to upland vegetation, especially since the allotment will be rested for two consecutive summers after each year of summer grazing, and grazing will be terminated at any time when use levels reach 40% as per Rangeland Health Standards and Guidelines. This schedule is biologically preferable to simply eliminating summer grazing because it provides for periodic rest of the allotment from continuous spring grazing.

In the riparian areas, monitoring shows improvement during the years of nonuse and within the exclosure, but shows ongoing degradation where cattle are now grazing. Reducing or eliminating summer grazing might bring about an improvement, but cattle would likely continue to concentrate in the riparian area during any time they are present. Fencing the degraded stream reach would likely effect a more rapid improvement and greatly increase the likelihood of achieving Desired Plant Community goals and Proper Functioning Condition. However, even without the fence, the revised grazing strategy should facilitate some improvement in vegetative and soil conditions on the allotment overall.

While fencing of Marble Creek and subsequent riparian growth may have some effect on transport of water to adjacent farmlands, I believe this impact would be mitigated by the BLM commitment to assist in maintenance of the stream channel to minimize any reduction or disruption of water flow. The downstream farm owner has suggested the residual impact may be “significant” thereby requiring an EIS. I have, however, reviewed the potential impacts carefully, and do not believe that fencing or removal of livestock from this stream channel would have a significant impact on the downstream water user. However, since IBLA has stayed construction of the fence I cannot and will not authorize it in this decision.

This decision still offers the opportunity to implement several RMP decisions and guidelines, comply with Rangeland Health Standards and Guidelines, and move toward Proper Functioning Condition, Desired Plant Community and Riparian Habitat Joint Venture riparian objectives, although to a lesser degree than full implementation of the Proposed Action.

Therefore, in order to prescribe the best management decision to meet objectives for both upland vegetation and riparian condition under the present circumstances, my decision is to authorize partial implementation of the proposed action. This measure is viewed as a positive action to promote a more healthy and sustainable rangeland.

I have determined that the proposed action, with the mitigation measures incorporated, will not have any significant impacts on the human environment and that an EIS is not required.

There will be no effect on threatened or endangered species as a result of the action.

This plan has been reviewed, and the proposed action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5. The proposed action is in conformance with the Bishop Resource Management Plan, which was approved March 25, 1993. It is my decision not to amend the Resource Management Plan to eliminate summer grazing as was originally proposed.

Authorized Official: _____
Bishop Field Manager

Date:_____